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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/596,549	06/19/2000	Andrew Booth	213201.00054	2122

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EXAMINER	
LUK, EMMANUEL S	

ART UNIT	PAPER NUMBER
1722	

DATE MAILED: 03/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/596,549	BOOTH ET AL.	
	Examiner	Art Unit	
	Emmanuel S. Luk	1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-22 and 28-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-22 and 28-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 2, 5, 7-9, 16-21, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bresolin (5859411).

Bresolin teaches a non-flat substrate (22) having a dielectric layer (16), having resistive layer (17) forming a circuit formed via screen printing (Col. 4, lines 17-18), contact points (19, 20) for forming the electrical communication, and an insulation layer (25).

It would have been obvious to one of ordinary skill in the art to recognize the substrate layer having a thermal coefficient of expansion substantially the same as the dielectric layer and resistive in order to prevent damage during operation of the heater.

In regards to claims 7, 8, 9, 20, and 21, these are processes for forming the apparatus and do not further limit the structure. The formation of the resistive layer can be from any number of processes, but what it is the structure that is important in an apparatus claim.

In regards to the pattern of the resistive trace, it would have been obvious for one of ordinary skill in the art through routine experimentation to find the optimum pattern for the resistive trace for heating in a heater.

In regards to claims 17, the dielectric strength of the dielectric layer is a cause effective variable that can be determined through routine experimentation. It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as through routine experimentation in the absence of a showing of criticality in the claimed properties of dielectric strength. *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

In regards to claim 31, the plurality of traces it would have been obvious to one of ordinary skill in the art to have a plurality of traces for a multiplied effect, in this case for improved heating. *In re Harza*, 124 PQ 378 (CCPA 1960). It would have been obvious to one skilled in the art to find the optimized pattern.

4. Claims 3, 4 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bresolin (5859411) as applied to claims 1, 2, 5, 7-9, and 16-21 above, and further in view of Schwarzkopf (6025577).

Bresolin fails to teach a cylindrical heater with a longitudinal slot.

However, cylindrical heaters for injection molding nozzles are extremely and as seen in Schwarzkopf, a heater having a tubular inner wall (2) and outer wall (4) with a slot (7) is known in the art. The shape of the walls in the heater for accommodating the construction is noted and this cylindrical shape is known in the art to allow for heating of the nozzle by a cylindrical heater. It would have been obvious for one of ordinary skill in the art to modify Bresolin in having a non-flat heater to be modified with being cylindrical as taught by Schwarzkopf thereby allowing for heating in a tubular environment, Schwarkopf being of a design to allow for the heater to slip on a nozzle (Col. 1, lines 29-30).

5. Claims 14 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bresolin (5859411) as applied to claims 1, 2, 5, 7-9, 16-21, 30 and 31 above, and further in view of Riley.

Bresolin fails to teach ceramic housing and contacts made from gold.

Riley teaches a thick film circuit element having substrates and layers that are formed via silk screen (Col. 3, line 67) onto the surfaces of the substrate (12). The substrates can be made of ceramic (Col. 3, line 65), other substrates include stainless steel (Col. 2, lines 65-66) and noble metals, such as gold (Col. 1, line 41) for use in the circuit. Riley teaches the use of a variety of different materials in the substrates, this also suggests use in parts other than substrates including the housing and contact pads, such as a ceramic housing and gold plated steel on the contact pads.

It would have been obvious to one of ordinary skill in the art to modify Bresolin with the materials being made from ceramic for the housing and the contact made from gold as taught by Riley since these are both commonly used elements within the heater arts.

6. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bresolin (5859411) in view of Schwarzkopf (6025577).

Bresolin teaches a non-flat substrate (22) having a dielectric layer (16), having resistive layer (17) forming a circuit formed via screen printing (Col. 4, lines 17-18), contact points (19, 20) for forming the electrical communication, and an insulation layer (25).

Bresolin fails to teach a heater for an injection nozzle and for the thermal conductivity of the substrate.

It would have been obvious to one of ordinary skill in the art to recognize the substrate layer having a thermal coefficient of expansion substantially the same as the dielectric layer and resistive in order to prevent damage during operation of the heater.

In regards to claims 7, 8, 9, 20, and 21, these are processes for forming the apparatus and do not further limit the structure. The formation of the resistive layer can be from any number of processes, but what it is the structure that is important in an apparatus claim.

However, cylindrical heaters for injection molding nozzles are extremely and as seen in Schwarzkopf, a heater having a tubular inner wall (2) and outer wall (4) with a

slot (7) is known in the art. The shape of the walls in the heater for accommodating the construction is noted and this cylindrical shape is known in the art to allow for heating of the nozzle by a cylindrical heater. It would have been obvious for one of ordinary skill in the art to modify Bresolin in having a non-flat heater to be modified with being cylindrical as taught by Schwarzkopf thereby allowing for heating in a tubular environment, Schwarkopf being of a design to allow for the heater to slip on a nozzle (Col. 1, lines 29-30).

7. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bresolin as applied to claims 1, 2, 5, 7-9, 16-21, 30 and 31 above, and further in view of Osuna-Diaz et al.

Bresolin fails to teach a detente.

Osuna-Diaz et al teaches a threading (24, 36) that locks the heater (28) into the place in relation to the nozzle. Instead of a detente being utilized to lock the substrate into position, one skilled in the art would recognize other fastening means including threads to hold a removable substrate into position surrounding a nozzle. It would have been obvious for the contacts to be situated so that when the substrate is locked into position that the contact pads would be in contact for the heater to work.

It would have been obvious to one of ordinary skill in the art to modify Bresolin to place and lock a heater in place surrounding a nozzle as taught by Osuna-Diaz because it allows for the substrate to be removed and replace for ease of maintenance of the apparatus.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bresolin in view of Swarzkopf as applied to claims 3, 4 and 15 above, and further in view of Goldwin (EP 0963829 A1).

Bresolin fails to teach the connector housing having a key for slidably engaging a longitudinal slot in the substrate.

Goldwin teaches an injection molding heater around a nozzle (130) comprising of a thin film heater (132) that has a connector (138), or key, that ensures the heater stays connected to the nozzle (Fig. 14A). One skilled in the art recognizes the above view of the nozzle and heater that the connector would be in a slot of the heater for engagement. The connector and slot also inherently ensures proper alignment of the heater with the nozzle for any desired configuration such as aligning with contact pads.

It would have been obvious to one of ordinary skill in the art to modify Bresolinwith a slot and key as taught by Goldwin because it ensures interchangeable heaters to the nozzle that can be aligned accordingly.

Response to Arguments

9. Applicant's arguments with respect to claims 1-5, 7-22, and 28-31 have been considered but are moot in view of the new ground(s) of rejection. The arguments presented by the applicants have been considered and the previous rejections have been withdrawn. However, examiner had to further expand the search of electric heaters since previously it was focused too narrowly upon heaters on injection molding

nozzles. The arguments concerning the combination of the references have been noted. The new references deal with Bresolin which is a heater and Schwarkopf a heater for injection nozzles, in which Bresolin is used in a tubular body. In the case of independent claims 1 and 30, only Bresolin is applied to the claims and fully teaches the use of a discontinuous pattern on a non-flat surface. Both Osuna-Diaz and Goldwin are also injection molding nozzle heaters and are the same as Schwarkopf in the knowledge to one skilled in the art.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Collins (5548268) teaches a thick film resistor and resistor network.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel S. Luk whose telephone number is (571) 272-1134. The examiner can normally be reached on Monday-Thursday 8 to 5 and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EL

DUANE SMITH
PRIMARY EXAMINER

3-20-06